

NOTES

THE health of M. Leverrier is so far restored as to enable him to stay at Dieppe during the bathing season. Learning that he intended to travel for his health, the new Minister of Public Instruction offered M. Leverrier a special credit for expenses, on the ground that "it is the national interest to preserve a man who is an honour to the nation."

THE programme of excursions of the French Association has been published in the Havre papers. It includes visits to Fécamp, a town which is rich in memorials of William the Conqueror; to Villiers-sur-mer and Trouville, and to Balbec, Tancarville, and Lillebonne, where a Roman circus has been discovered; a visit to Havre and vicinity, and an excursion to Rouen and a visit to its manufactures and monuments. In his inaugural speech M. Broca, the president, will deal with the same subject as Prof. Allen Thomson at Plymouth. We regret to state that M. Kuhleman, who had been elected president for 1878 at Clermont-Ferrand, has resigned. The Association will have again to choose a president for 1878, and also for 1879; the latter will act as vice-president next year. According to a decision agreed to last year, the 1878 meeting will take place at Versailles during the International Exhibition, the rules not allowing any meeting to be held in Paris. The organisation of that exceptional meeting, and the measures for the reception of foreign members and associates, will require much consideration.

THE *Denver Tribune* of August 2 announces the arrival in that city of the Hayden scientific party, of which Dr. Hayden, Sir J. D. Hooker, Gen. Strachey, and Prof. Asa Gray form part. Southern Colorado had been explored, and the mountains above George-town and Berthoud's Pass, &c., were then to be visited, when the party were to move on to Utah, Nevada, and California.

PROF. WANKLYN has been elected to the chair of Chemistry and Physics of St. George's Hospital, vacated by the death of Dr. Noad, F.R.S.

THE official paper of the French Republic has gazetted the organisation of the jury and the scheme for distribution of awards for the forthcoming Universal Exhibition. Independently of works of art 100 great prizes and exceptional allocations in silver will be distributed by a special jury composed of the presidents of all the juries; 1,000 gold medals, 4,000 silver medals, 8,000 bronze medals, and 8,000 honourable mentions will be distributed by a number of class or sectional juries. The juries will be appointed by the several Governments in proportion to the number of exhibitors.

THE *Frigorifique*, fitted up for the transportation of meat on the Tellier system with methylic acid, has arrived at Havre, from Brazil, with its cargo in an excellent state of preservation. It is stated that a banquet of the meat will be served during the forthcoming session of the French Association at Havre.

MR. G. S. BOULGER, Professor of Natural History in the Cirencester College, reprints from the *Proceedings* of the Cotteswold Naturalists' Field Club, a pamphlet entitled "Notes Preliminary to a Proposed Flora of Gloucestershire." As the title implies, there is no attempt to arrive at an estimate of the vegetable productions of the county, and the publication would appear to have for its main object the inviting of information on the subject (addressed to Mr. Boulger at the Scientific Club, Savile Row) from those who have in any way worked at its flora.

THE last Annual Report of the Smithsonian Institution relating to the year 1875, contains much of great scientific importance. The institution continues to carry on, with admirable efficiency its two great classes of operations—1st, those relating to the immediate objects of the bequest, viz., the increase and

diffusion of knowledge through researches, publications, and exchanges, and 2nd, those which pertain to the care and management of the Government collection in natural history and ethnology constituting the United States National Museum, of which the Institution is the custodian. Under the care of the institution this museum bids fair to become one of the finest in the world. During 1874 important meteorological researches were undertaken by the Institution, and its publications embrace valuable works in nearly all departments of science. Among the papers printed as an Appendix to the present Report, are Arago's Eulogy of Volta, De Candolle's Probable Future of the Human Race, Prof. Prestwich's inaugural lecture on the Past and Future of Geology (which appeared in *NATURE* at the time), a paper on the Refraction of Sound, by Mr. W. B. Taylor, a paper on an International Code of Ethnological Symbols, and Dr. Abbott's elaborate memoir on the Stone-Age in New Jersey.

SOME of our readers may be interested to know that the Ipswich Museum, under the curatorship of Dr. Taylor, contains a very fine collection of crag fossils. Prof. Ray Lankester, in a letter to a local paper, states his conviction, founded upon wide knowledge of such collections, "That the combination of Mr. Canham's collection with the valuable and unique specimens already presented to the museum by Mr. Alderman Packard, when mayor, and by other public-spirited men, has rendered the collection of crag fossils, shells, teeth, bones, box-stones, and clay nodules, by a long way the most complete in existence. I doubt," Prof. Lankester says, "if any other town possesses—certainly no English town does—so complete and valuable a series of specimens illustrative of its local geology."

PETERMANN'S *Mittheilungen* for September will contain a map of considerable interest at the present time, but also of the highest permanent value,—is a map of the region between and including Bulgaria, S.E. Servia, and the Balkans. This is the result of many journeys made by the author, F. Kanitz, between the years 1860 and 1875, and is accompanied with a detailed account of the results obtained. This same number will contain the conclusion of Giussfeldt's travels in the Arabian Desert, and of Polakowsky's paper on the Vegetation of Costa Rica.

THE *Bulletin* of the Paris Geographical Society for June contains a long paper by M. J. Dupuis on his journey in Yunnan.

COL. GORDON, Governor-General of Upper Egypt, has made a contract with Messrs. Yarrow and Co., of Poplar, for the construction of four very light draft steel steamers, for use on Lake Albert Nyanza, and for opening up the navigation of the rivers in Central Africa. These steamers will be carried on land on the backs of negroes, and consequently Messrs. Yarrow and Co. have to sub-divide the packages in such a manner that none shall exceed 200lb. weight. It is estimated that no less than 4,000 men will be employed for the portage of these vessels.

WE have received No. 3 of *Appalachia*, the journal of the Appalachian Mountain Club, which contains several papers of general interest.

STANFORD'S Library Map of Africa, originally constructed by the late A. Keith Johnston, and of which a new edition is just out, is as fine a specimen of map construction as we have seen. The scale is so large as to admit of exhibiting minute features, and the map not too large to be hung on a wall. It is brought up to the latest date, which is saying a great deal in respect of Africa, and so far as we have tested it, shows everything that such a map ought to do.

OUR agricultural readers would do well to procure a circular issued by the Science and Art Department, South Kensington, giving directions for the collection and forwarding collections of

wheat, barley, and oats, the growth of 1877, required to show the variations in quality existing in these descriptions of corn according to the circumstances and conditions influencing their growth. Such a collection is important both from a practical and a scientific point of view.

WE have received a very interesting catalogue of a collection of great interest to archaeologists and collectors generally to be sold by Mr. Stevens, of King Street, Covent Garden, at the Alexandra Palace, on Tuesday and Wednesday next. This is the collection known as the Whitfield collection, containing many fine specimens of implements, weapons, ornaments, clothing, &c., from the South Sea Islands and other regions, as well as a number of natural history objects. Those of our readers wishing to form or to complete collections would do well to get a catalogue and attend the sale.

PROF. PIAZZI SMYTH, of the Royal Observatory, Edinburgh, writing to the *Scotsman* under date August 19, 4 P.M., states that in the twenty-seven hours elapsed since the 18th, at one o'clock P.M., the amount of rainfall was 1.349 inch—a greater amount than has been registered at Edinburgh before, within the same length of time, during the present year. "Twice only, on January 1 and July 16, did the day's record just rise above one inch; but each of those days was a Monday's record, summing up a forty-eight hour, in place of the usual twenty-four hour, interval. On each of these occasions, however, of undoubtedly heavy rainfall, as well as the present extra one, the direction of the wind was east. That is not an ordinary direction from which to expect rain, but when it does come from that quarter it has the characteristic, only recently ascertained, of producing a particular band in the prismatic spectrum of sky-light, by which its approach may often be usefully predicted, and by any and every private observer for themselves, even in cases where the barometer may fail."

AMONG the subjects on which papers are to be read during the present session at the Bradford Scientific Association, are—On Colour, by Henry Pocklington; The Structure of Stems, by Mr. J. Abbott; On Grasses, by Mr. W. West; Indigo, by Mr. Whittaker; Pyroxiline, by Mr. J. A. Douglas; Field Geology, by Mr. A. Crebbin.

THE Yorkshire Naturalists' Union paid a visit to Goole Moors recently, where they had a field-day and a general meeting, which appear to have been in all respects successful.

THE leading article in the August number of the *American Naturalist* is an exceedingly pungent address on "Catastrophism and Evolution," by Clarence King, who treats the subject with animation and force. Both evolutionists and their opponents will read the article with interest.

WE have received from a Ceylon correspondent an interesting account of the Colombo Museum, which we regret being unable to publish in full. He also sends us a photograph of the museum, which, we believe, is the finest building in the island, not excepting Government House, indeed will compare favourably with similar buildings even at home. This is a work with which the name of Sir W. H. Gregory, who has just completed his term of government in the island of Ceylon, will always be associated. The colony has been increasing in wealth at an unprecedented rate during the last five years, and the governor has done his best to make the intellectual and moral elevation of the people equal their material prosperity. There are few countries where the aids of science are so necessary. There are few countries where those aids have been so greatly neglected. Sir Wm. Gregory saw this, and tried to give to the people themselves those tastes which alone could lead to the proper remedy. With this view the museum was built at Colombo, to be a sort of nucleus for the spread of general scientific education. The Colombo Museum

occupies a commanding position in the Cinnamon Gardens, a favourite evening resort. The collection within is a very scanty one, as might be expected from an institution only five months old and in a place where a general taste for science has yet to be cultivated. Most important collections as yet relate to the history, antiquities, and superstitions of the island. A large room is filled with specimens of native manufacture. In the abundant vegetable wealth with which Ceylon has been favoured, the treasures that may lie hidden beneath in its rocks have been treated with comparative neglect. Very little has been done for its geology, as will be evident from a glance at the one glass-case devoted to specimens of Ceylon rocks. We trust, however, that in time a collection will be formed worthy of the building and the island. We ought not to omit mentioning that the museum contains a magnificent collection of snakes (Ceylon) by Mr. W. Ferguson, of Colombo. A catalogue would be of great service and might be made eminently instructive. We hope that the public of Ceylon will soon fill the empty shelves in token of their appreciation of the generosity shown by the Government in giving them a free museum.

WE are pleased to notice that the new building for the Peabody Museum of American Archaeology and Ethnology is so far finished as to enable Mr. F. W. Putnam, the Director, to begin work there, and he has now removed the collections forming the Museum from Boylston Hall, where they have been in temporary quarters, to the upper rooms of the new building, which is located near the Zoological Museum, and will eventually form a part of one grand structure. The new Museum is fire-proof, and the building is only to be used for the purposes of the trust, viz., a museum and library (and lecture-rooms eventually) of Archaeology and Ethnology. The present portion will cost, when cased, not far from 60,000 dols., and a building fund of 50,000 or 60,000 dols. will still be left for its completion. The original fund for the building was 65,000 dols., and it is proposed always to retain at least 50,000 dols. as a building fund for the future. The present building will supply the wants of the Museum probably for the next ten years. We are also interested to know that the collection of Peruvian articles, obtained about thirty years ago by Mr. John H. Blake, of Boston, and which has been consulted by so many writers on Peru, has just been presented to the Peabody Museum, and will form a valuable addition to the already large Peruvian collection given by the late Prof. Agassiz and his son Alexander.

DR. HORNSTEIN, of Prague, has communicated a paper to the Vienna Academy on the probable connection of the wind with the period of sun-spots. He shows that in Prague, as in Oxford, the average yearly direction of the wind, in the time of minimum to maximum sun-spots, progresses in the direction from south to west, and on the other hand, in the time from maximum to minimum sun-spots, it shows an opposite variation. Dr. Hornstein finds further, that the average wind-strength in Prague likewise exhibits a connection with the eleven-years' period of sun-spots, inasmuch as both phenomena reach their maxima and minima simultaneously. This research is based on 240,000 observations.

THE obvious importance of photography to explorers lends considerable interest to a new process devised by M. Deyrolle, in virtue of which the baggage of an explorer who might wish to carry 300 negative plates measuring 24 cm. by 18, would only be increased by a weight of six kilogrammes, all included, instruments, plates, developers, and accessories. Glass plates are dispensed with, being replaced by paper coated with a layer of prepared wax, capable of bearing 75° without fusion. The paper is covered with sensitive collodion, prepared so as to retain its properties for two years or more. The development after impression is very simple; into a litre of water is put 20 grammes

of citric acid, as much acetic acid, and 3 grammes of pyro-gallic acid; an atom of nitrate of silver is added. The negative is placed in this developer and left in it till the coloration of the image becomes sufficiently intense; then it is passed into a bath of hyposulphide of soda, then washed and dried between leaves of blotting paper. It is then proof against heat and moisture, and may be kept indefinitely in an album. The apparatus itself is so constructed as to be capable of remaining two days in water, even in sea water, without deterioration.

THE most important papers read at the meetings of the Kharkov Society of Naturalists during 1876 are:—"On the Mechanism of the Respiration of Birds," by N. Byeletsky; "On Respiration of Roots," by A. Zaykevich; two entomological papers on the province of Kharkov, by P. Ivanov and V. Yaroshevsky; "On the Arachnidæ *Arenææ*, and on the Conjunction of *Chlamydomonas pulviretus* and *Stiglocolumnum*," by L. Reinhard; and the continuation of the "Flora of Ukraina" (*Compositæ* to *Salsolacææ*), by K. Gornitsky.

MR. THOMAS S. CAYZER, head-master of Queen Elizabeth's Hospital, Bristol, known as the author of one thousand arithmetical tests and of other approved school-books, has made a complete collection of the principal passages in Latin authors that refer to our island, and editing them with vocabulary and notes, is about to issue the volume through Messrs. Griffith and Farran, as a Latin reading-book, illustrated with many woodcuts and a map, under the title of "Britannia."

THE additions to the Zoological Society's Gardens during the past week include a Slow Loris (*Nycticebus tardigradus*) from India and a Cape Hedgehog (*Erinaceus frontalis*) from West Africa, received in exchange; a Wedge-tailed Fruit Pigeon (*Treron sphenura*) from India, presented by Mr. A. H. Jamrach; an Egyptian Gazelle (*Gazella dorcas*) from Barbary, presented by Capt. J. Graham.

AN ALGERIAN INLAND SEA

AS our readers are aware several schemes have recently been before the public for the creation of an inland sea in North Africa, one of the most ambitious and most impracticable of these being the flooding of a great part of the Sahara. Another scheme which has engaged the attention of the French Government for some time is much more feasible and likely to be attended with good results. The Report of a Commission on the plan proposed by M. Roudaire for the creation of an inland Algerian sea was recently presented to the French Academy of Sciences by M. Favé, and as it contains several points of scientific interest, we propose to lay it before our readers.

Since the French domination was extended in the province of Constantine as far as the town of Biskra, the attention of several observers has been turned to the very marked depressions of the soil, which commence at about 50 kilometres to the south of Aurès, that is, to the border of the Sahara, and extending from east to west. M. Virlet d'Aoust supposed, in 1845, from the measurement of the slope of a river discharging into the Chott (or marshy lake) Mel-Rir, that the bottom of that chott must be below the level of the Mediterranean. In 1849 M. Dubocq, a mining engineer, proved, by a very numerous series of barometric observations, published in 1853, that singular anomaly, which Capt. Vuillemot confirmed in 1856. It was reserved to Capt. Roudaire, to render the fact incontestable and to determine the depth with almost complete accuracy.

After having taken for his starting-point the *embouchure* of one of the two small streams which fall into the sea at the bottom of the Gulf of Gabès, M. Roudaire traversed the steppe of Gabès, 46 metres high, then arrived at the depression of a chott the surface of which he estimated, at sight, at 5,000 square kilometres. He then reached, by crossing a second elevation of 45 metres, that of Kritz, the depression of the Chott Rharsa, situated to the east of the Chott Mel-Rir, from which it is separated only by two elevations of small height. These two slight elevations bound the Chott Asloudj, the surface of which

does not exceed 80 square kilometres. The surface of the Chott Rharsa has been estimated at 1,350 square kilometres; that of the Chott Mel-Rir, which has been surrounded by a polygon of levelling, contains 6,700 square kilometres. The three basins which form the Chotts El Djerid, Rharsa, and Mel-Rir have not yet been surveyed in all directions; but M. Roudaire has concluded from various observations that the mean depth of the two Chotts Mel-Rir and Rharsa must not be below 24 metres. The small Chott El Asloudj, which is intermediate, has a mean depth of only from one to two metres, which makes him regard it as a slightly elevated barrier between the two great lakes. If it be admitted that this barrier could be pierced by a trench of suitable depth, and that the water of the sea were led from the Gulf of Gabès to the entrance of the Chott Rharsa, the sea would fill that chott, as also the Chott Mel-Rir, and the depth of water would be sufficient in the two lakes for the navigation of all vessels. Articles of commerce could be transported thence to all parts of the world without any re-embarkation.

Such is the starting-point of a project for an inland sea which M. Roudaire has had constantly in his mind during all his labours: he is confident that the execution is an easy matter, without allowing himself to be discouraged by any obstacle. The enterprise, supposing it to be realised, would certainly not present commercial advantages comparable in any respect to those resulting from the canalisation of the Isthmus of Suez. The products of Central Africa, transported by camels across the desert do not seem to be sufficiently abundant to furnish freight for a large number of vessels. There is no doubt, however, that if the products of Central Africa had no longer to bear the expense of so long a carriage by land, their price would be notably lowered and their consumption increased. But indeed it would be impossible to estimate the benefits which in the future would result from the creation of such an inland sea. Considerations of another kind leave no doubt, M. Favé thinks, as to the improvements which would result from an inland sea covering 13,230 square kilometres, from a climatic point of view and in relation to the fertility of the soil.

Prof. Tyndall was engaged for some years in determining the action which the vapour of water exercises upon radiant heat. He has proved that even with complete transparency to light, the vapour of water absorbs radiant heat to a very notable extent. The vapour of water possesses that absorbent property much more than the air with which it is mixed, in however small a proportion; and its absorbent power increases very nearly in proportion to its mass. Prof. Tyndall has not failed to bring out the influence which the invisible vapour of water contained in the air exercises upon temperature, both during day and night, and he has been able hence to draw immediate conclusions as to its influence upon the life of plants. After having measured directly the quantity of heat absorbed by very minute quantities of vapour of water mixed with air in his experimental tubes, he feels authorised to speak thus:—"Considering the earth as a source of heat, it may be admitted as certain that at least 10 per cent. of the heat which it tends to radiate into space is intercepted by the first six feet of moist air which surrounds its surface." Prof. Tyndall hence draws this conclusion:—"The suppression, during a single night of summer, of the moisture contained in the atmosphere which covers England would be accompanied by the destruction of all the plants which frost kills."

It is not only the cold of night which is increased at the surface of the ground by the dryness of the air, but also the heat of day; so that the variations of temperature produced in twenty-four hours are sometimes very great and very prejudicial to the vegetation of a great number of plants. We may apply these considerations to the region of the chotts, where M. Roudaire, in his expedition of 1874-5, found heat of 25° (C.) during the day, and cold of 8° below zero during the night. After that we need not be longer surprised that the lands comprised between the slopes south of Aurès and the chotts produce very little, however favourable in themselves they may be to vegetation. If we admit with M. Roudaire, agreeing in this point with all explorers of the chotts, that their cavities have at one time formed salt lakes, dried up gradually during the historic period, we shall obtain an explanation of the changes in the production of the soil of the province of Constantine, and of Tunis since the epoch of Roman domination, when the province of Africa was much more populous and much more fertile than at present.

M. Roudaire has sought to find results of observations from which he might conclude what would be the depth of the bed of